UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
WASHINGTON

CONSTRUCTION SPECIFICATION

CS-17 STRUCTURAL BACKFILL

17.1 SCOPE

The work shall consist of required backfilling around all structures to the lines and grades as shown on the drawing.

17.2 MATERIALS

Backfill shall be select material or the same material as specified for adjacent earth fill. Fill shall contain no sod, brush, roots or other foreign materials. The maximum size of rock fragments incorporated in the backfill shall be three (3) inches, provided that such rock fragments are completely imbedded in the matrix of the compacted backfill.

17.3 PLACEMENT

Backfill shall be placed in horizontal layers with a maximum thickness of 4 inches before compaction. No backfill shall be placed on a frozen surface.

17.4 COMPACTION

Fill adjacent to structures shall be compacted to a density equivalent to that of the surrounding fill by means of hand tamping, power tampers, or plate vibrators. Unless otherwise specified, heavy equipment including backhoe-mounted power tampers, or vibrating compactors and manually directed vibrating rollers, shall not be operated within 2 feet of any structure. Towed or self-propelled vibrating rollers shall not be operated within 5 feet of any structure. Compaction by means of drop weights operating from a crane or hoist is not permitted.

Compacting of fill adjacent to concrete structures shall not be started until the minimum time interval is reached or the concrete has attained the strength specified. The strength attained shall be determined by compression testing of test cylinders cast for this purpose and cured at the work site.

When the required strength of the concrete is not specified as described above, compaction of fill adjacent to structures shall not be started until the following time intervals have elapsed after placement of the concrete.

STRUCTURE	TIME INTERVAL
Retaining walls and counterforts (Impact basins)	14 days
Walls backfilled on both sides simultaneously	7 days
Conduits and spillway risers, cast-in-place (with inside forms in place)	7 days
Conduits and spillway risers, cast-in-place (inside forms removed)	14 days
Conduits, precast, cradled	2 days
Conduits, precast, bedded	1 day
Anti-seep collars and cantilever outlet bents (backfilled both sides simultaneously)	3 days

17.5 LAYER THICKNESS

When using hand tampers, the layer thickness before compaction shall not exceed 4 inches.

17.6 MOISTURE CONTENT

Moisture content for the fill matrix at the time of compaction shall be specified within the range of +/- 2% of the optimum moisture as determined using ASTM D-698.

The fill material shall be brought to the specified moisture range before compaction. Material that is too wet for compaction shall be allowed to dry before compaction or be removed from the fill area.

If the top surface of a preceding layer or foundation becomes too dry or over-compacted, it shall be scarified and moistened prior to placement of the next layer of fill.

17.7 TESTING

Density and moisture content of the fill may be tested by the NRCS technical representative at any time during placement and before final acceptance.